Supplementary Materials for

Mineral vesicles and chemical gardens from carbonate-rich alkaline brines of Lake Magadi, Kenya

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This document includes legends for the videos and the following figures:

- Figure S1: Powder X-ray diffraction of mineral gardens synthesized by immersing $CaCl_2{\cdot}2H_2O$ pellets in Lake Magadi water
- Figure S2: Powder X-ray diffraction of mineral gardens produced by immersing $CoCl_2{\cdot}6H_2O$ pellet in Magadi water
- Figure S3: Raman spectra of mineral vesicles synthesized by adding drops of saturated $CaCl_2{\cdot}2H_2O$ solution onto Lake Magadi water
- Figure S4: EDX mapping of membrane cross-section of vesicles synthesized by adding saturated $CaCl_2{\cdot}2H_2O$ solution onto Lake Magadi water
- Figure S5: EDX analysis of membrane cross-section of vesicles synthesized by adding saturated $CaCl_2{\cdot}2H_2O$ solution onto Lake Magadi water
- Figure S6: EDX analysis of calcium mineral membrane cross-section containing gaylussite
- Figure S7: EDX analysis of membrane cross-section of vesicles synthesized by adding saturated $BaCl_2{\cdot}2H_2O$ solution onto Lake Magadi water
- Figure S8: EDX mapping of membrane cross-section of vesicles synthesized by adding saturated $BaCl_2{\cdot}2H_2O$ solution onto Lake Magadi water
- Figure S9: EDX analysis of the cross-section of mineral vesicles synthesized by adding saturated $MnCl_2{\cdot}4H_2O$ solution onto Magadi water
- Figure S10: EDX analysis of the interior surface of mineral vesicles synthesized by adding saturated $MnCl_2{\cdot}4H_2O$ solution onto Magadi water
- Figure S11: Powder X-ray diffraction of mineral vesicles synthesized by adding saturated $Co(NO_3)_2{\cdot}6H_2O$ solution onto Lake Magadi water
- Figure S12: Powder X-ray diffraction of mineral vesicles synthesized by adding saturated $MgSO_4$ solution onto Lake Magadi water
- Figure S13: Powder X-ray diffraction of mineral vesicles synthesized by adding saturated $ZnSO_4{\cdot}7H_2O$ solution onto Lake Magadi water

Other Supplementary Material for this manuscript includes the following:

Video S1: Gas bubbling and bursting of reaction products of the $FeCl_3$ pellet and Magadi water
Video S2: Gas bubbling and bursting of reaction products of the $CuCl_2{\cdot}6H_2O$ pellet and Magadi water
Video S3: Gas bubbling and bursting of reaction products of the $ZnCl_2$ pellet and Magadi water
Video S4: Growth process of mineral gardens by the interaction of the $CaCl_2{\cdot}2H_2O$ pellet with Magadi water
Video S5: Growth process of mineral gardens by the interaction of the $Co(NO_3)_2{\cdot}6H_2O$ salt pellet with Magadi water

Video S6: Gas bubbling and bursting upon the reaction of drops of saturated $FeCl_3$ solution and Magadi water

Video S7: Gas bubbling and bursting upon the reaction of drops of saturated $CuCl_2{\cdot}6H_2O$ solution and Magadi water

Video S8: Gas bubbling and bursting upon the reaction of drops of saturated $ZnCl_2$ solution and Magadi water

Video S9: Synthesis of mineral vesicles by adding saturated $CaCl_2{\cdot}2H_2O$ solution onto Magadi water

Video S10: Synthesis of mineral vesicles by adding saturated $BaCl_2{\cdot}2H_2O$ solution onto Magadi water

Video S11: Synthesis of mineral vesicles by adding saturated $MnCl_2{\cdot}4H_2O$ solution onto Magadi water

Video S12: Synthesis of mineral vesicles by adding saturated CoCl2·6H2O solution onto Magadi water

Video S13: Synthesis of mineral vesicles by adding saturated $MgCl_2{\cdot}6H_2O$ solution onto Magadi water

Video S14: Synthesis of mineral vesicles by adding saturated $FeCl_2{\cdot}4H_2O$ solution onto Magadi water

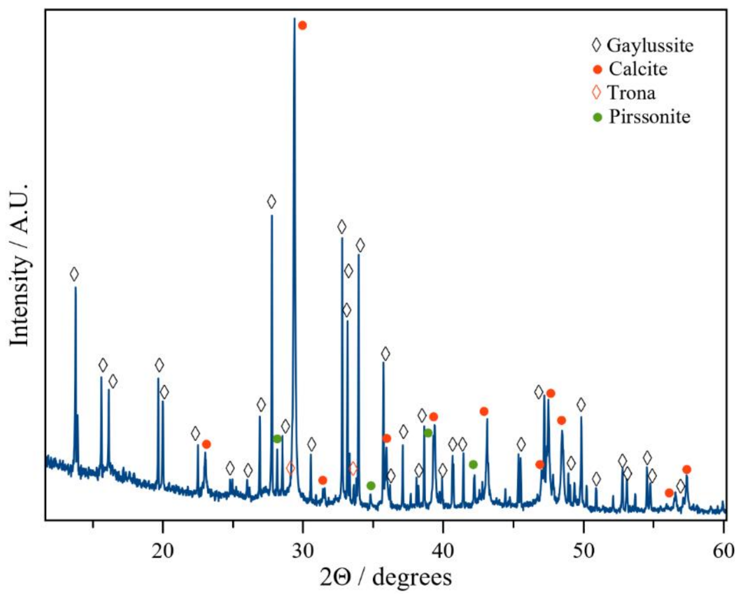

Figure S1: Powder X-ray diffraction of mineral gardens synthesized by immersing $CaCl_2{\cdot}2H_2O$ pellets in Lake Magadi water

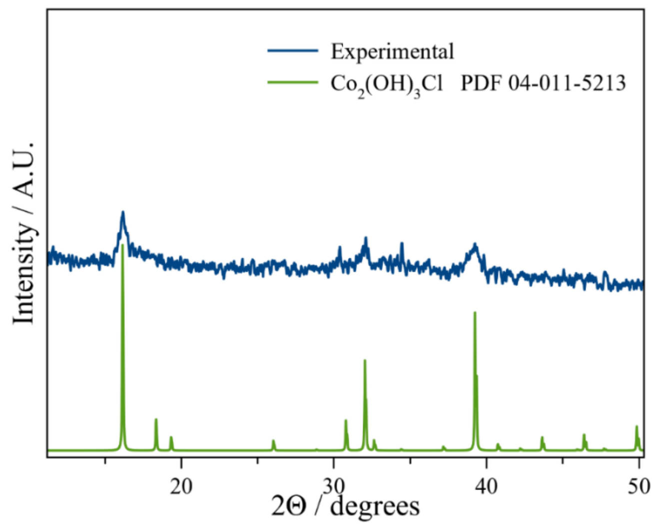

Figure S2: Powder X-ray diffraction of mineral gardens produced by immersing $CoCl_2{\cdot}6H_2O$ pellet in Magadi water

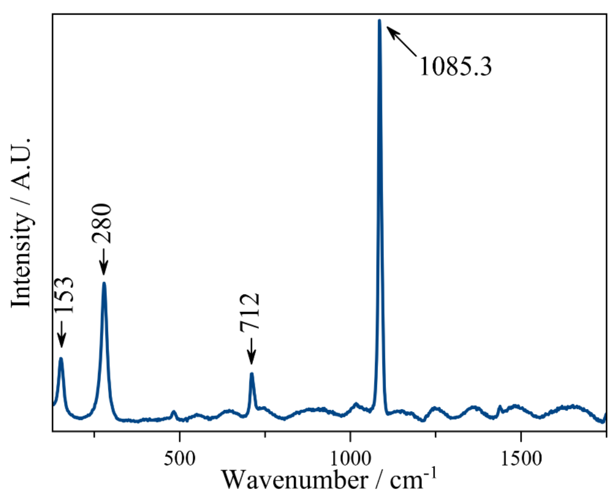

Figure S3: Raman spectra of mineral vesicles synthesized by adding drops of saturated $CaCl_2{\cdot}2H_2O$ solution onto Lake Magadi water (153, 280, 712, and 1085.3 cm^{-1} are translational, librational, in-plane bending and symmetric stretching modes respectively)

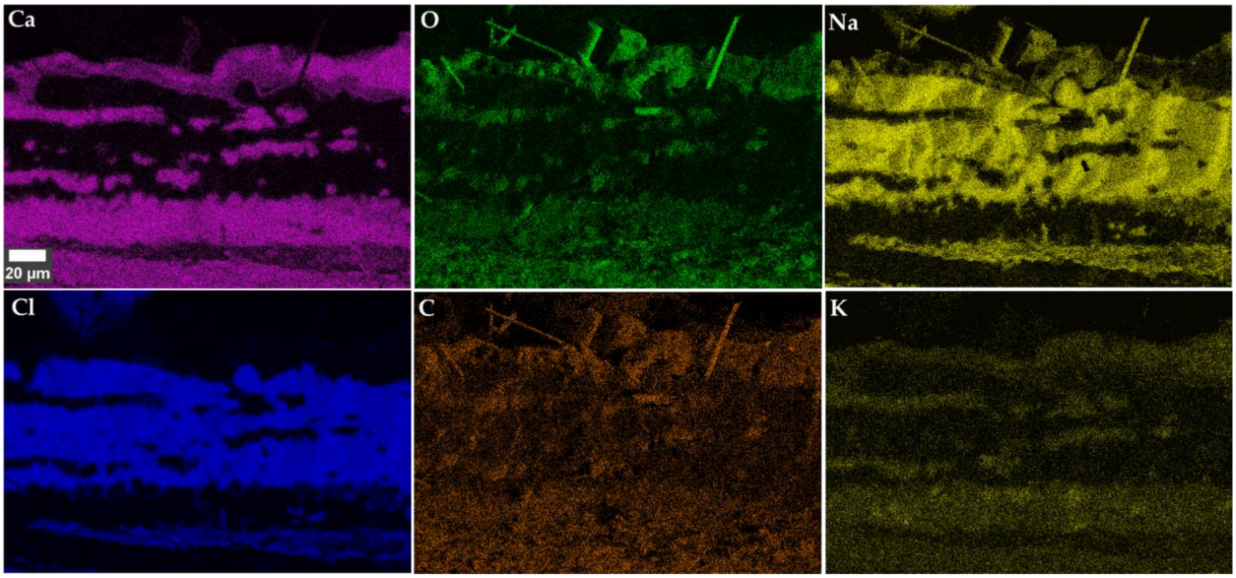

Figure S4: EDX mapping of membrane cross-section of vesicles synthesized by adding saturated $CaCl_2{\cdot}2H_2O$ solution onto Lake Magadi water

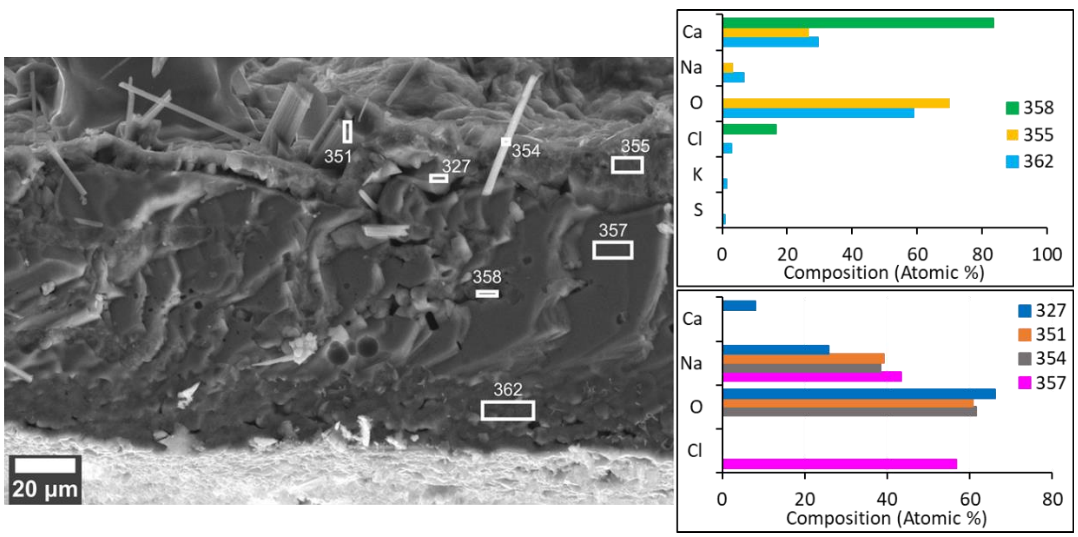

Figure S5: EDX analysis of membrane cross-section of vesicles synthesized by adding saturated $CaCl_2{\cdot}2H_2O$ solution onto Lake Magadi water

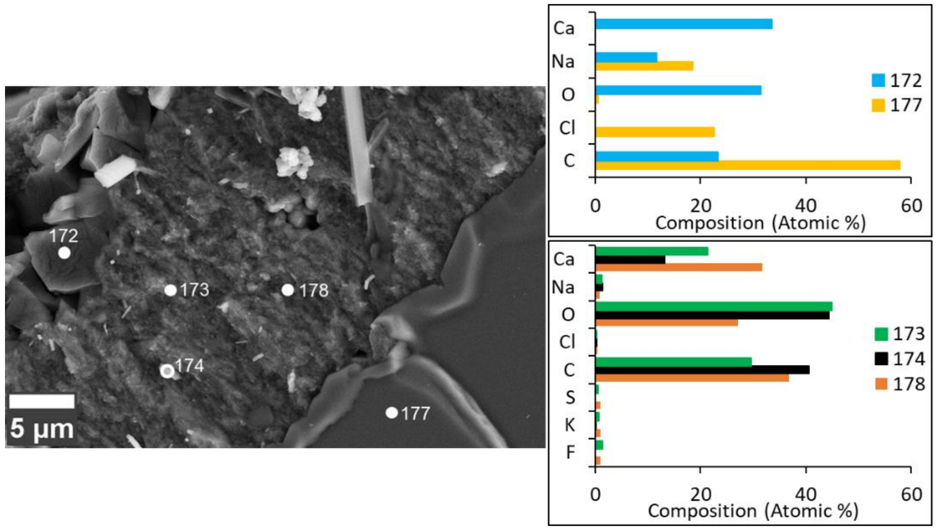

Figure S6: EDX analysis of calcium mineral membrane cross-section containing gaylussite

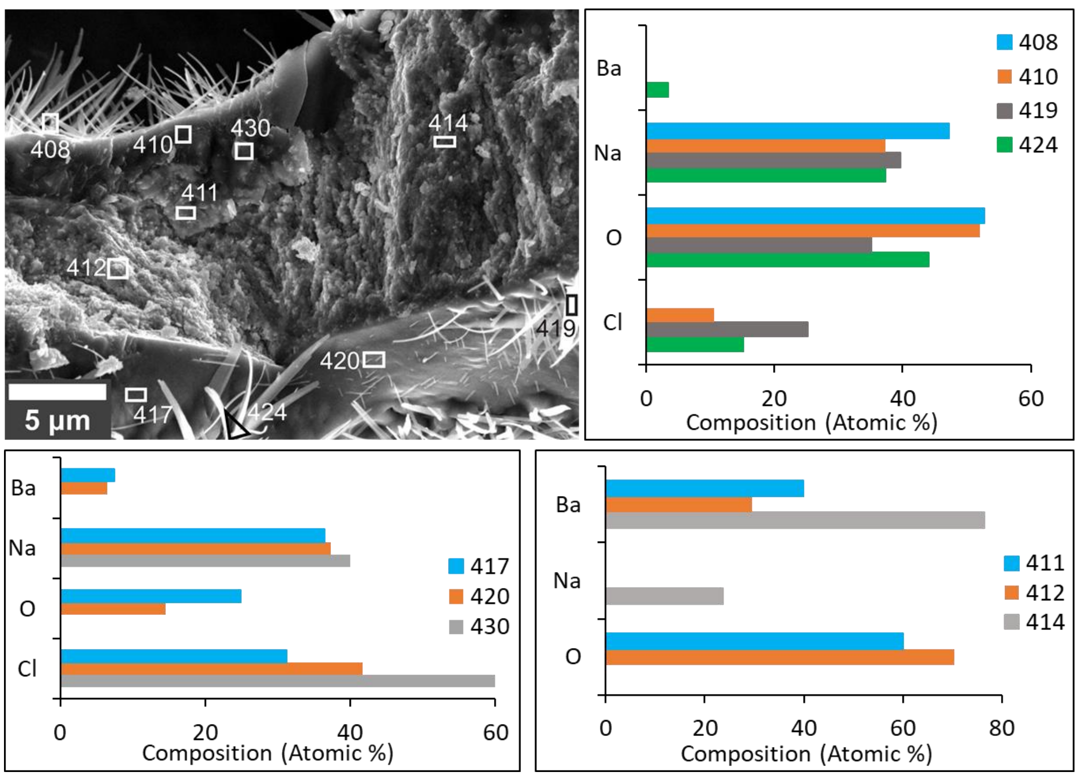

Figure S7: EDX analysis of membrane cross-section of vesicles synthesized by adding saturated $BaCl_2 \cdot 2H_2O$ solution onto Lake Magadi water

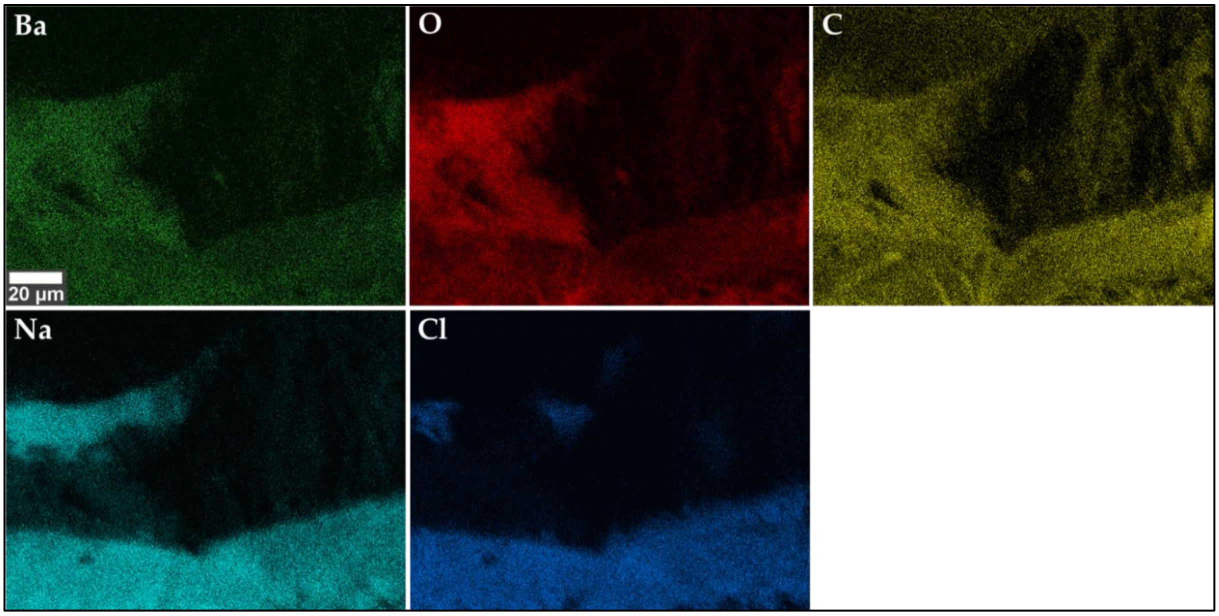

Figure S8: EDX mapping of membrane cross-section of vesicles synthesized by adding saturated $BaCl_2 \cdot 2H_2O$ solution onto Lake Magadi water

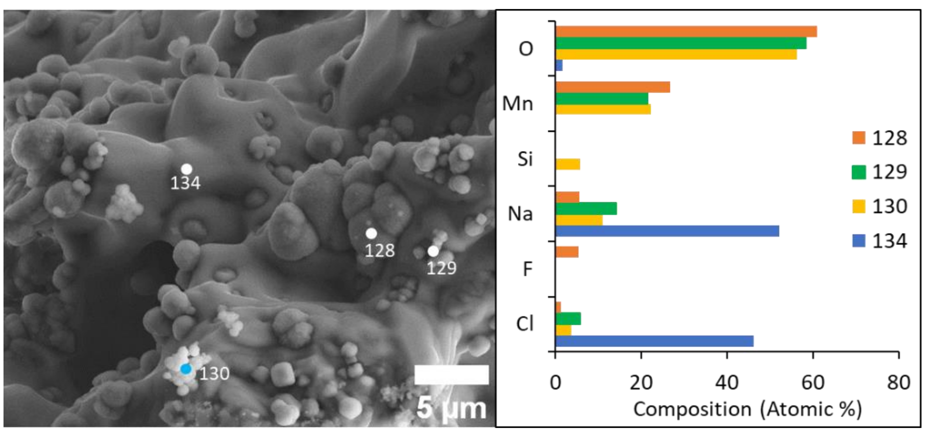

Figure S9: EDX analysis of the cross-section of mineral vesicles synthesized by adding saturated $MnCl_2 \cdot 4H_2O$ solution onto Magadi water

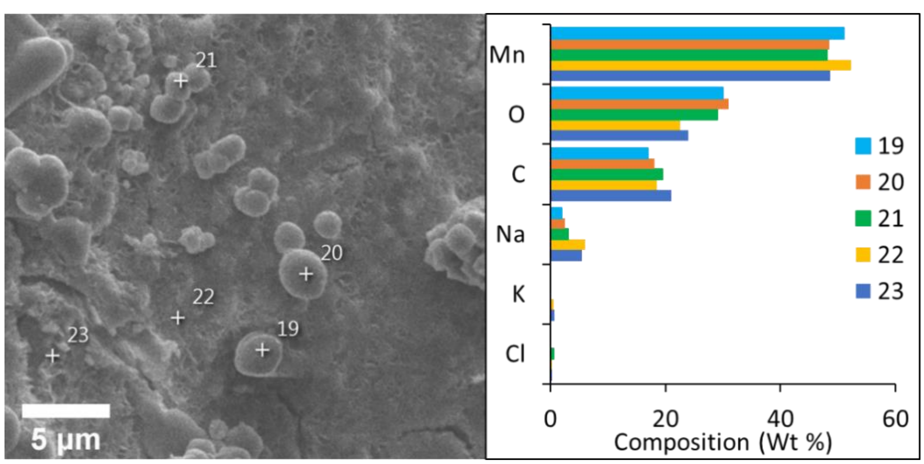

Figure S10: EDX analysis of the interior surface of mineral vesicles synthesized by adding saturated $MnCl_2 \cdot 4H_2O$ solution onto Magadi water

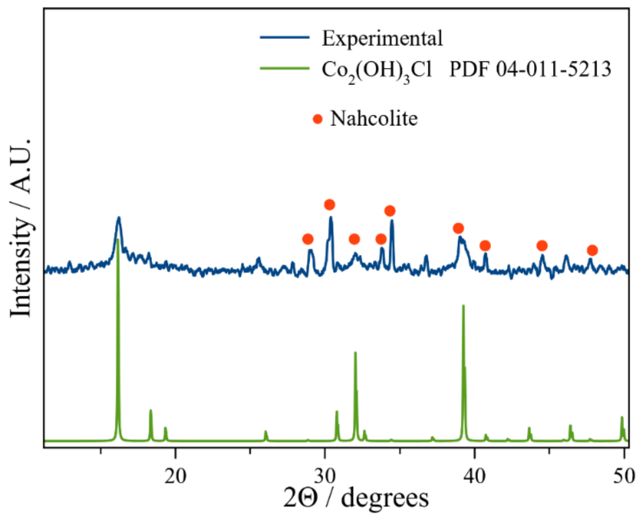

Figure S11: Powder X-ray diffraction of mineral vesicles synthesized by adding saturated $Co(NO_3)_2 \cdot 6H_2O$ solution onto Lake Magadi water

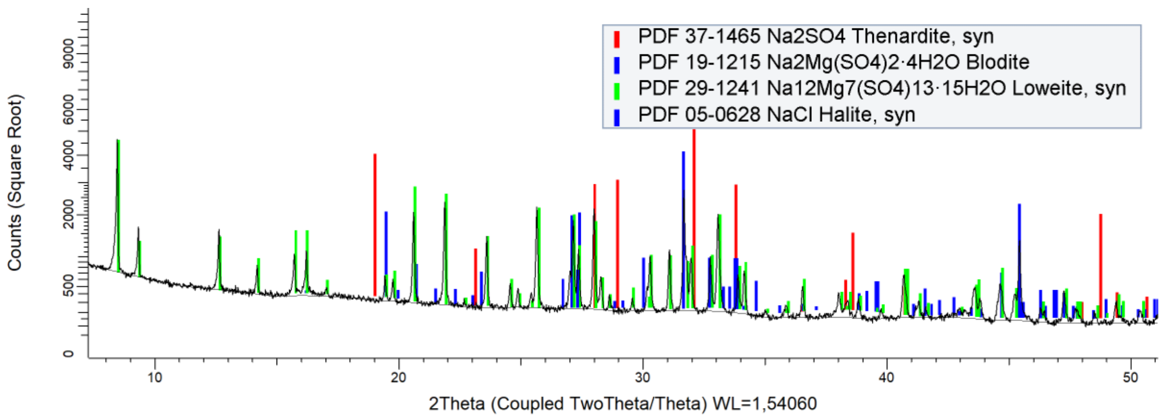

Figure S12: Powder X-ray diffraction of mineral vesicles synthesized by adding saturated $MgSO_4$ solution onto Lake Magadi water

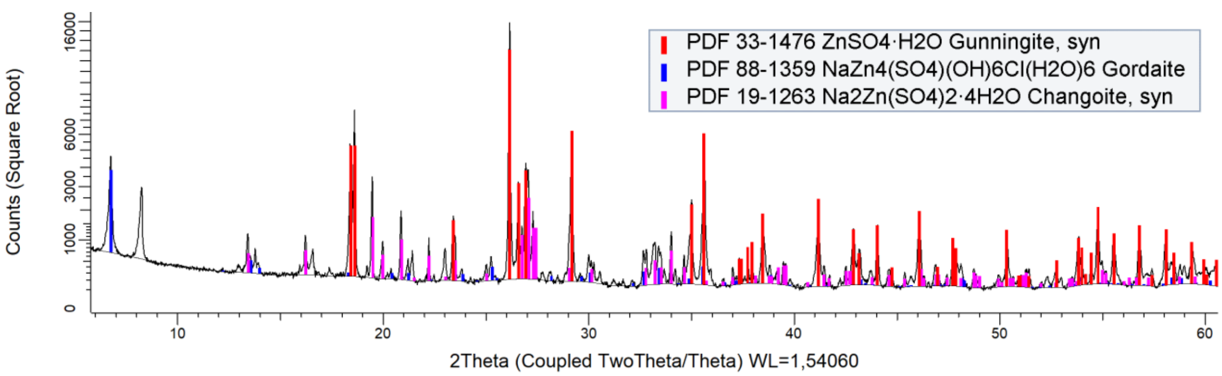

Figure S13: Powder X-ray diffraction of mineral vesicles synthesized by adding saturated $ZnSO_4 \cdot 7H_2O$ solution onto Lake Magadi water